Curriculum vitæ – Heikki Mäntysaari

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Work experience

Brookahven National Laboratory
Postdoctral Research Associate **October 2015** –
Nuclear Theory Group.

Univeristy of Jyväskylä, Department of Physics
Postdoctoral researcher **July 2015 – October 2015**
Ultra Relativistic Heavy Ion Collisions theory group.

University of Jyväskylä, Department of Physics
PhD student **January 2012 – June 2015**
Graduate studies in the Ultra Relativistic Heavy Ion Collisions theory group. Funded by the National Graduate School of Particle and Nuclear Physics.

University of Jyväskylä, Department of Physics
Trainee **April 2011 – December 2011**
Ultra Relativistic Heavy Ion Collisions theory group.

University of Jyväskylä, Department of Physics
Summer trainee **June 2010 – July 2010**
Ultra Relativistic Heavy Ion Collisions theory group.

The Finnish Defence Forces, Land Warfare School, department of research and development
Assistant researcher **July 2008 – January 2009**
Compulsory military service January 2008 – January 2009. Special officer (*assistant researcher*) during the last 6 months, tasks: software development, testing and training. Promoted to 2nd lieutenant.

Studies

University of Jyväskylä, *Doctor of Philosophy* **June 2015**
Subject: theoretical physics.
Thesis: *Scattering off the Color Glass Condensate* (arXiv:1506.07313), evaluated as *Accepted with honors*. Postgraduate studies evaluated as 5/5 (excellent). 96 ECTS credits.

University of Jyväskylä, *Master of Science* **December 2011**
Major subject: theoretical physics. Evaluated as 5/5 (excellent). 128 ECTS credits.

Additional studies

- Advanced studies in mathematics (122 ECTS credits).
  Completed: March 2014. Evaluated as 5/5 (excellent).
- Pedagogical studies (60 ECTS credits, Finnish teachers qualification).
  Completed: May 2015. Evaluated as 5/5 (excellent).

University of Jyväskylä, *Bachelor of Science*) **October 2010**
Major subject: physics, minor subjects: mathematics and computer science. 181 ECTS credits.

Upper secondary school of Orivesi **2007**

Citation summary

8 original research articles and **11** conference proceedings published. In total **181** citations. Average number of citations for published original articles: **21.1**. h-index **7**.

Original research articles

B. Ducloué, T. Lappi and H. Mäntysaari
Phys. Rev. D. **91** (2015) 114005, `arXiv:1503.02789 [hep-ph]` *Forward J/Ψ production in proton-nucleus collisions at high energy.*

T. Lappi and H. Mäntysaari
Phys. Rev. D. **91** (2015) 074016, `arXiv:1502.02400 [hep-ph]` *Direct numerical solution of the coordinate space Balitsky-Kovchegov equation at next-to-leading order.*

T. Lappi, H. Mäntysaari and R. Venugopalan
Phys. Rev. Lett. **114** *(2015) 082301* `arXiv:1411.0887 [hep-ph]`: *Ballistic protons in incoherent exclusive vector meson production as a measure of rare parton fluctuations at an Electron-Ion Collider.*

T. Lappi and H. Mäntysaari
Phys. Rev. D. **88** (2013) 114020, `arXiv:1309.6963 [hep-ph]`: *Single inclusive particle production at high energy from HERA data to proton-nucleus collisions.*

T. Lappi and H. Mäntysaari
Phys. Rev. C. **87** (2013) 032201, `arXiv:1301.4095 [hep-ph]`: *J/Ψ production in ultraperipheral Pb+Pb and p+Pb collisions at LHC energies.*

T. Lappi and H. Mäntysaari
Eur. Phys. J. **C73** (2013) 2307, `arXiv:1212.4825 [hep-ph]`: *On the running coupling in the JIMWLK equation.*

T. Lappi and H. Mäntysaari
Nucl. Phys. **A908** (2013) 51-72, `arXiv:1209.2853 [hep-ph]`: *Forward dihadron correlations in deuteron-gold collisions with a Gaussian approximation of JIMWLK.*

T. Lappi and H. Mäntysaari
Phys. Rev. C. **83** (2011) 065202, `arXiv:1011.1988 [hep-ph]`: *Incoherent diffractive J/Ψ production in high-energy nuclear deep-inelastic scattering.*

Conference proceedings

B. Ducloué, T. Lappi and H. Mäntysaari
arXiv:1509.04853 [hep-ph]: *Nuclear modification of forward J/Ψ production in proton-nucleus collisions at the LHC*. Talk by B.D. at the 7th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions (June 2015)

T. Lappi and H. Mäntysaar
arXiv:1508.03434 [hep-ph]: *Solving the NLO BK equation in coordinate space*. Talk by T. L. at XXIII Internatonal Workshop on Deep-Inelastic Scatering and Related Subjects (April 2015)

T. Lappi and H. Mäntysaari
arXiv:1508.03434 [hep-ph]: *Solving the Balitsky-Kovchegov equation at next to leading order accuracy*. Talk by H.M. at the 7th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions (June 2015).

T. Lappi and H. Mäntysaari
PoS (DIS2014) 068, arXiv:1406.2878 [hep-ph]: *Dipole amplitude with uncertainty estimate from HERA data and applications in Color Glass Condensate phenomenology*. Talk by H.M. at XXII. International Workshop on Deep-Inelastic Scattering and Related Subjects (May 2014).

T. Lappi and H. Mäntysaari
Pos (DIS2014) 069, arXiv:1406.2877 [hep-ph]: *Diffractive vector meson production in ultraperipheral heavy ion collisions from the Color Glass Condensate*. Talk by H.M. at XXII. International Workshop on Deep-Inelastic Scattering and Related Subjects (May 2014).

T. Lappi and H. Mäntysaari
Nucl. Phys. **A932** (2014) 69-74, arXiv:1403.7289 [hep-ph]: *Proposal for a running coupling JIMWLK equation*. Talk by T.L. at the 6th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions (November 2013).

T. Lappi and H. Mäntysaari
Nucl. Phys. **A932** (2014) 549-554, arXiv:1403.6944 [hep-ph]: *Particle production from the Color Glass Condensate: proton-nucleus collisions in light of the HERA data*. Talk by H.M. at the 6th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions (November 2013).

T. Lappi and H. Mäntysaari
Nucl. Phys. **A926** (2014) 186-197, arXiv:1311.7310 [hep-ph]: *Particle production in the Color Glass Condensate: from electron-proton DIS to proton-nucleus collisions*. Talk by H.M. at the International Conference on the Initial Stages in High-Energy Nuclear Collisions (September 2013).

T. Lappi and H. Mäntysaari
arXiv:1310.6336 [hep-ph]: *Models for exclusive vector meson production in heavy-ion collisions*. Talk by T.L. at the EDS Blois 2013 (September 2013). **T.**

Lappi and H. Mäntysaari
Nucl. Phys. **A904-905** (2013) 807c-810c, `arXiv:1210.4655 [hep-ph]`: *Forward particle correlations in the color glass condensate.* Talk by T.L. at Quark Matter 2012 (August 2012).

T. Lappi and H. Mäntysaari
Nucl. Phys. **A910-911** (2013) 498-501, `arXiv:1207.6920 [hep-ph]`: *Forward dihadron correlations in the Gaussian approximation of JIMWLK* . Talk by H.M. at the 5th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions (May 2012).

REFEREE

- Referee for Nuclear Physics A, Proceedings of the Hard Probes 2013 conference.

SCIENTIFIC TALKS

- June 2015: *Numerical solution to the NLO BK equation.* Hard Probes 2015, Montreal, Canada.
- June 2014: *Incoherent and coherent vector meson production in ultraperipheral heavy ion collisions from the Color Glass Condensate.* Workshop on photon-induced collisions at the LHC. CERN, Switzerland (contributed talk).
- May 2014: *Dipole amplitude with uncertainty estimate from HERA data and applications in Color Glass Condensate phenomenology* and *Diffractive vector meson production in ultraperipheral heavy ion collisions from the Color Glass Condensate.* DIS 2014, Warsaw, Poland (contributed talks).
- March 2014: *Color Glass Condensate from HERA to proton-nucleus collisions including uncertainty analysis.* Physics Days, Tampere, Finland (contributed talk).
- January 2014: *Particles from the Colored Glass: diffraction, DIS and hadron production.* Nuclear theory/RIKEN seminar, Brookhaven National Laboratory, New Yor, USA.
- November 2013: *Color Glass Condensate from electron-proton DIS to proton-nucleus collisions.* Hard Probes 2013, Stellenbosch, South Africa (contributed talk).
- October 2013: *Particle production in the Color Glass Condensate: from HERA data to proton-nucleus collisions.* Particle Physics Day, Helsinki, Finland (contributed talk).
- September 2013: *Color Glass Condensate from electron-proton DIS to proton-nucleus collisions.* International Conference on the Initial Stages in High-Energy Nuclear Collisions, Pontevedra, Spain (contributed talk).
- September 2013: *Dipole model fits to DIS data.* Physics Opportunities at an ElecTron-Ion Collider workshop, Jyväskylä, Finland (contributed talk).
- June 2013: *Probing the Color Glass Condensate: from single inclusive baseline to dihadron correlations.* h3QCD (high energy, high density and hot QCD), ECT* Trento, Italy (contributed talk).
- May 2013: *Probing the Color Glass Condensate: from single inclusive baseline to dihadron correlations.* Workshop on proton-nucleus collisions at the LHC, ECT* Trento, Italy (contributed talk).
- November 2012: *Single and double inclusive particle production in pp and pA collisions in the Color Glass Condensate.* Particle Physics Day, Jyväskylä, Finland (contributed talk).
- May 2012: *Azimuthal angle correlations in forward dihadron production in pA*

collisions. NeD/TURIC 2012, Crete, Greece (contributed talk).
- April 2012: *Azimuthal angle correlations in forward dihadron production in pA collisions*. Hard Probes 2012, Cagliari, Italy (contributed talk).
- March 2012: *Azimuthal angle correlations in forward dihadron production in pA collisions*. Physics Days, Joensuu, Finland (contributed talk).

Posters

- June 2014: *Diffractive vector meson production in ultraperipheral heavy ion collisions from the Color Glass Condensate*. Quark Matter 2014, Darmstadt, Germany.
- August 2012: *Forward dihadron correlations in the Gaussian approximation of JIMWLK*. Quark Matter 2012, Washington DC, USA.

Teaching

- Spring 2014: Quantum Chromodynamics, teaching assistant (18 h)
- Autumn 2013: Mathematical Methods in Physics: Integral Transforms, teaching assistant (12h)
- Autumn 2013: Mathematical Methods in Physics: Linear Algebra, teaching assistant (14h)
- Spring 2013: Quantum mechanics II, teaching assitant (26 h)
- Autumn 2012: Particle physics, teaching assistant (24 h)
- Spring 2012: Quantum mechanics II, teaching assistant (26 h)
- Autumn 2011: Particle physics, teaching assistant (24 h)
- Autumn 2010: Mechanics, continuation, teaching assistant (14 h)
- Autumn 2010: Mechanics, introduction, teaching assistant (28 h)
- Training camps for the Finnish and Estonian high school students attending to the International Physics Olympiad. 2010–
- Autumns 2010, 2011 and 2012: Tutoring new students.
- Mathematics and physics at the Upper secondary school of Orivesi for high school and upper secondary school students as a substitute teacher during periods 6.4.–17.4.2009, 7.9.–11.9.2009, 29.3.–1.4.2010 and 27.8.2010.

Workshop organization

- Physics Opportunities at an ElecTron-Ion Collider workshop, Jyväskylä September 2013. Member of the local organizing committee.

Honours and Awards

- Jyväskylä Physical Society, best MSc thesis at the Department of Physics (University of Jyväskylä) in 2011.
- International Physics Olympiad 2007: representative of Finland, honorable mention.
- IV Estonian-Finnish Olympiad in Physics (2007): 6th position
- National physics competition for the upper secondary school students 2006–2007: 2nd position

Theses

- PhD thesis (June 2015):
  Scattering off the Color Glass Condensate. Supervisor Dr. T. Lappi.
- MSc thesis (November 2011):
  Balitsky-Kovchegov equation, supervisor Dr. T. Lappi.
- Research training (August 2011):
  Nuclear Suppression in Diffractive Vector Meson Production. Supervisor Dr. T. Lappi.

- BSc thesis (August 2010)
  Diffraktiivinen syvä epäelastinen sironta dipolimallissa (*Diffractive Deep Inealstic Scattering in Dipole Model*). Supervisor Dr. T. Lappi.

Positions of trust

- University of Jyväskylä, Department of Physics. Coordinator of the teacher-tutor (*omaopettaja*) program 2014–2015.
- University of Jyväskylä, Faculty of Mathematics and Science: member of the examination board 2014–2015
- University of Jyväskylä, Faculty of Mathematics and Science: vice member of the examination board 2011–2013
- International Physics Olympiad 2012, 2013, 2014: team leader
- Coordinator of the Finnish International Physics Olympiad training 2011–
- Jyväskylä Physical Society, member of the board 2010–2014
- Jyväskylä Physical Society, student division, member of the board 2009

Non-scientific Publications

H. Mäntysaari *et al.*
Kansainväliset fysiikkaolympialaiset Kazakstanissa (*International Physics Olympiad in Kazakhstan*). Dimensio 5/2014.

H. Mäntysaari *et al.*
Suomi menestyi kansainvälisissä fysiikkaolympialaisissa (*Finland succeeded in the International Physics Olympiad*). *Dimensio* 5/2013.

H. Mäntysaari *et al.*
Suomi menestyi kansainvälisissä fysiikkaolympialaisissa (*Finland succeeded in the International Physics Olympiad*). *Dimensio* 5/2012.

Language skills

- Finnish: mother tongue
- English: fluent
- Swedish: moderate

Updated October 1, 2015.